

CLAIMS

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that the tongue-and-groove joint is further so designed that the boards, during a final phase of the inwards angling when the locking element is inserted into the locking groove, can take a position where there is a space (S) in the groove (36) between the inner and the outer vertical plane (IP, OP) and below the tongue (38); and

that the lower abutment surfaces (45, 52) are positioned essentially outside the outer vertical plane (OP).

2. A locking system as claimed in claim 1, wherein said space (S) in the joined state is horizontally extended below the tongue (38) essentially all the way from the inner vertical plane (IP) to the outer vertical plane (OP), so that essentially no part of the lower abutment surfaces (45, 52) is positioned inside the outer vertical plane (OP).

3. A locking system as claimed in claim 1 or 2, wherein said space (S) during the final phase of the inwards angling is horizontally extended below the tongue (38) essentially all the way from the inner vertical plane (IP) to the outer vertical plane (OP).

4. A locking system as claimed in ~~any one of the preceding claims~~, wherein the groove (36) in the joined state has an upper and a lower horizontal surface which constitute inwardly directed extensions of the upper abutment surface (43) and the lower abutment surface (45), respectively, of the groove (36), and wherein there is in the joined state a horizontal play (Δ) between the bottom of the groove (36) and the tip of the tongue (38).

5. A locking system as claimed in ~~any one of the preceding claims~~, wherein the outer vertical plane (OP) is located at a horizontal distance inside a vertical joint plane (F), which is defined by adjoining upper portions (41, 48) of the joined joint edges (4a, 4b) of the two boards (1, 1').

6. A locking system as claimed in ~~any one of the preceding claims~~, wherein the lower abutment surfaces

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cont
B (45, 52) are located at least partially outside a vertical joint plane (F) which is defined by adjoining upper portions (41, 48) of the joined joint edges (4a, 4b) of the two boards (1, 1').

5 *Sub 3* 7. A locking system as claimed in claim 6, wherein the major part of the lower abutment surfaces (45, 52) is positioned outside the vertical joint plane (F).

a *Sub 1* 8. A locking system as claimed in *claim 1* ~~any one of the preceding claims~~, wherein the projecting portion (P) and *10* *12* the groove (36) are arranged in one and the same joint edge (4a) of the floorboard (1).

a 9. A locking system as claimed in *claim 1* ~~any one of the preceding claims~~, wherein the projecting portion (P) is at least partially made in one piece with a body (30, 32, *15* 34) of the floorboard (1).

Sub 5 10. A locking system as claimed in claim 9, wherein the locking element (8) of the projection portion (P) is positioned under or on a level with the lower abutment surface (45) of the groove (36).

a *Sub 1* 11. A locking system as claimed in *claim 1* ~~any one of the preceding claims~~, wherein the projecting portion (P) is at least partially formed of a material other than that of the body of the floorboard.

Sub 2 12. A locking system as claimed in claim 11, wherein *25* in the projecting portion (P) is at least partially formed of a separate strip (6) which is integrally connected (60, 62, 64) with the board (1) by being mounted in the factory.

a *Sub 3* 13. A locking system as claimed in *claim 1* ~~any one of the preceding claims~~, wherein the projecting portion (P) *30* is resilient transversely of the principal plane of the floorboards.

a 14. A locking system as claimed in *claim 1* ~~any one of the preceding claims~~, wherein the tongue (38) is insertable *35* into the groove (36) and the locking element (8) is insertable into the locking groove (14) by a mutual horizontal joining of the joint edges (5a, 5b) of the boards.

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Sub 39 15. A locking system as claimed in claim 14, wherein the groove (36) has in its upper part a bevelled portion (42) for guiding the tongue (38) into the groove (36).

a *Sub 40* 16. A locking system as claimed in *Claim 1* ~~any one of the~~ preceding claims, wherein the projecting portion (P), in the horizontal direction between the lower abutment surfaces (45, 52) of the tongue-and-groove joint on the one hand and the locking element (8) of the projecting portion (P) on the other hand, has a lower portion (7) which is positioned below said lower abutment surfaces (45, 52).

a 17. A locking system as claimed in *Claim 1* ~~any one of the~~ preceding claims, wherein the tongue (38) is anglable into the groove (36) and the locking element (8) is insertable into the locking groove (14) by said mutual angular motion of the boards about upper portions (41, 48) of the joint edges (4a, 4b) while said upper portions (41, 48) are held in mutual contact.

a 18. A floorboard (1) provided along one or more sides with a locking system as claimed in *Claim 1* ~~any one of the~~ preceding claims.

Sub B1 19. A floorboard (1) as claimed in claim 18, which has opposite long sides and short sides and which is mechanically joinable along its long sides with long sides of identical floorboards by downward angling and which is mechanically joinable along its short sides with short sides of identical floorboards by displacement along said long sides.

Add B1 *add B1* *add E1*